eg. An electron orbits the proton in a Hydrogen atom a distance 0.50 Å (ångström) = 5.0×10^{-11}m away.

a) what is the electrostatic force between the electron and proton?

$F_e = KQq/r^2$

9.0E9x1.6E-19x1.6E-19/(5E-11^2)=0.0

9.2×10^{-8}N

b) imagine the electron moving in circular motion. What is the velocity and period of the orbit?

$F_c = F_e$

$mv^2/r = 9.2 \times 10^{-8}$N

v = Sqrt(9.2E-8x5E-11/9.11E-31)=

2.24708617276631E6

2.2×10^6m/s

$v = 2\pi r/T$

T = 2x3.14159x5E-11/2.2E6=0

1.4×10^{-16}s

p436 Q1-7,

p437 Q1-13 odds

next class electric fields
http://www.falstad.com/vector3de/
http://www.its.caltech.edu/~phys1/java/phys1/EField/EField.html

Electric Fields

recall, gravitational field strength $g=F_g/m$
it is the force per unit mass on an object in the gravitational field. Units are N/kg (equivalent to m/s^2)

Electric field strength, E (watch out! not Energy!!)

$E = F_e/q$ the force per unit charge on a small positive test charge, q. (it is small so that it doesn't alter the field, positive indicates the direction of the field lines, show the direction of force on a positive charge.)

units: N/C

Field lines

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http://www.its.caltech.edu/~phys1/java/phys1/EField/EField.html